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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,683	02/10/2004	Jennifer Hoyt Lalli	05500008US	7374
7590	06/05/2006		EXAMINER	
McGuireWoods, LLP Suite 1800 1750 Tysons Blvd. McLean, VA 22102			TRAN, THAO T	
			ART UNIT	PAPER NUMBER
			1711	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

✓

*Supplemental*  
**Office Action Summary**

Application No.

10/774,683

Applicant(s)

LALLI ET AL.

Examiner

Thao T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 49-88 is/are pending in the application.
- 4a) Of the above claim(s) 49-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 59-88 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This is a Supplemental Office action and it is to replace the prior Office action of 03/09/2006.

#### ***Response to Amendment***

2. The Amendments filed on 11/30/2005 are acknowledged.
3. Newly added claims 49-88 are currently pending in this application. Claims 1-48 have been canceled.
4. In view of the Office action of 6/02/2005, the rejection of claims 1-13 as being anticipated by Natan '886 has been moot due to the cancelation of the claims.

#### ***Election/Restrictions***

5. Newly submitted claims 49-68 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 49-68 are directed to a method for producing a free-standing elastomeric nanocomposite film that was not in the originally elected claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 49-68 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Objections***

6. Claim 79 is objected to because of the following informalities: line 1, "The method of claim 69" should be changed to --The method of claim 70--. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 79 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 79 recites the limitation "said removing step" in line 1. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 69-85, 87-88 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki et al. (US Pat. 6,592,945).

Suzuki discloses a method of manufacturing a structure, comprising forming a layer of a crosslinkable polymer on a substrate, depositing metal nanoparticles on the polymer film, repeating the process multiple times to form a laminate of multilayers of the polymer and the nanoparticles, and curing the layers with heat or light (see Example 3; col. 2, ln. 57-59). The crosslinkable polymers include all the polymers as presently claimed (see col. 4, ln. 59-65). The nanoparticles include those recited in the instant claims, such as gold having an average diameter of 3 nm (see col. 3, ln. 14-19; Example 3).

Although Suzuki does not specifically disclose the polymer layers to be abrasion resistant, since the reference uses the same polymers as recited in the instant claims, the layer would inherently be abrasion resistant as presently claimed.

### *Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 69-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Natan et al. (US Pat. 6,624,886), Natan et al. (US Pat. 6,242,264), or Natan et al. (US Pat. 6,025,202) in view of Meisenburg et al. (US 2004/0235997) or Suzuki et al. (US Pat. 6,592,945).

Natan '886 discloses a method for making a film of Au nanoparticles, the method comprising forming a monolayer of Au nanoparticles on a glass substrate coated with APTMS or MPTMS; immersing the monolayer in a crosslinker, 2-mercaptoethylamine. The surface is then

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immersed in a solution of Au nanoparticles for one hour. The process is repeated between 3-8 times, thus forming multilayers of the Au nanoparticles and the crosslinker. (See col. 4, ln. 53-60; col. 15, ln. 41-46; Example 6).

Natan '886 further discloses that the Au nanoparticles used can be coated with an organic or inorganic polymer (see col. 5, ln. 56-60). However, Natan '886 does not specify the type of polymer nor the curing step of the polymer to form an abrasion resistant layer.

Natan '264 and Natan '202 each disclose a method for producing a nanocomposite film, comprising forming a multilayer on a substrate; wherein the substrate is coated with an organosilane and the multilayer further includes Au colloid monolayers alternating with layers of 2-mercaptoethylamine as a bifunctional crosslinker. The colloidal Au solution contains Au particles and APTMS (see Natan '264, col. 38, ln. 43-53; Natan '202, col. 37, ln. 37-47), which reads on the presently claimed abrasion resistant resin.

However, neither Natan '264 nor Natan '202 discloses the step of curing the abrasion resistant resin.

Meisenberg teaches a coating material comprising nanoparticles modified with a siloxane resin, which is cured by actinic radiation to undergo polymerization and crosslinking, for the purpose of enhancing heat and yellowing stability and moisture resistance (see abstract; paragraphs 0027, 0037, 0041, 0046, 0048). Therefore, it would have been obvious to one of ordinary skill in the art, to have employed the nanoparticles modified with a siloxane resin of Meisenberg in the invention of the Natan references, to improve heat and yellowing stability of the nanocomposite film.

Suzuki discloses a laminate comprising layers of Au nanoparticles and polysiloxane polymer, wherein the polymer is cured by heat or light, to provide diffusion suppression of the nanoparticles (see Example 3; col. 2, ln. 57-59). Therefore, it would have been obvious to one of ordinary skill in the art, to use the polysiloxane layers of Suzuki in the invention of Natan references, to improve dispersion of the nanoparticles in the polymer layers. Although Suzuki does not specifically disclose the polymer layers to be abrasion resistant, since the reference uses the same polymers, the layers would inherently be abrasion resistant as presently claimed.

#### ***Response to Arguments***

13. Applicant's arguments with respect to the 102(e) rejection of claims 1-13 as being anticipated by Natan '886 have been moot due to the cancelation of the claims.

#### ***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao T. Tran whose telephone number is 571-272-1080. The examiner can normally be reached on Monday-Friday, from 9:00 a.m. - 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

tt  
May 26, 2006

  
**THAO T. TRAN**  
**PATENT EXAMINER**